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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/371,973	08/10/1999	JAMES B. PONZO		9873

7590 07/31/2003

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EXAMINER

DOROSHENK, ALEXA A

ART UNIT PAPER NUMBER

1764

DATE MAILED: 07/31/2003

185

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/371,973	Applicant(s) PONZO ET AL.	
	Examiner Alexa A. Doroshenk	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 19, 2003 has been entered.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 5-8, 12-15 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuntz (3,535,879).

With respect to claims 1, 8 and 15, Kuntz discloses a catalyst bed comprising:  
a plurality of thin metal plates (24) in a stacked contiguous relation (see fig. 2);  
each plate having a surface of catalytic material (col. 3, lines 2-5);  
each plate having a plurality of flow-through holes (46) of size and location for flow of fuel axially (42) through said stacked plates; and  
at least a portion of each plate on a downstream side being etched to permit lateral flow of fuel between said plates (col. 3, lines 43-56 and col. 4, lines 33-41).

With respect to claims 5, 12 and 20, Kuntz further discloses wherein said etched side comprises unetched portions forming support (58) columns for supporting each plate on an adjacent plate (see fig. 4 and col. 4, lines 33-41).

With respect to claims 6 and 13, Kuntz further discloses wherein said metal plates are substantially circular (see fig. 2).

With respect to claims 7 and 14, Kuntz further discloses wherein said metal plates are bonded to one another to form a monolithic stack (col. 4, lines 41-49).

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 4, 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuntz (3,535,879).

With respect to claims 4, 11 and 19, Kuntz does not explicitly disclose wherein said flow-through holes are axially offset, but Kuntz does teach wherein offsetting of diverters results in facilitating the propellant flow and the contacting of the flow with the catalytic surface of the plates (col. 3, lines 43-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply this off-set teaching to another flow element, the flow-through holes, in order to further promote flow and contacting of the fuel flow with the catalytic surface as taught to be an advantageous and desired by Kuntz.

6. Claims 2, 3, 9, 10, 17, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuntz (3,535,879) in view of Hsu et al. (6,183,703 B1).

With respect to claim 2, 9 and 17, Kuntz does not disclose wherein a plurality of plates comprises a plurality of groups of plates and each group being separated from adjacent groups by a metering plate.

Hsu et al. discloses a stacked plate reactor with catalyst and teaches wherein a flow adjustment element (reads on metering plate) can be used to restrict flow to achieve greater uniformity of flow (col. 10, lines 15-22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide flow adjustment elements to the stack of Kuntz in order to achieve greater uniformity of flow through the device.

With respect to claims 2, 3, 9, 10, 17, 18 and 21, Kuntz does not disclose a desired ratio of open area of various structural elements of the device.

Hsu et al. also discloses the any suitable design of flow adjustment element can be used to restrict the flow at selected and determinable rate (col. 10, lines 15-22). In stating thus, Hsu et al. has recognized the design of the flow element to be a result effective variable. A person having ordinary skill in the art would have found it obvious to determine the optimum design or designs of such a result effective variable recognized in the art, as it has been held that such a discovery is ordinarily within the skill level of the art. *In re Boesch and Slaney*, 617 F2d. 272, 276 [205 USPQ 215, 219] (CCPA 1980).

7. Claims 1, 4-8, 11-15, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashmead et al. (5,690,763).

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With respect to claims 1, 8 and 15, Ashmead et al. discloses a catalyst bed comprising:

a plurality of thin metal plates (100, 200, 300, 400, 500, 600, 700, 800, 900, 1000) in a stacked contiguous relation (see fig. 1 and 5);

wherein a plate has a surface of catalytic material (col. 7, lines 55-60);

each plate having a plurality of flow-through holes (see each of the reference numbers ending in "V" in figure 5) of size and location for flow of fuel axially through said stacked plates (col. 8, lines 37-39); and

at least a portion of each plate on a downstream side being etched to permit lateral flow of fuel between said plates (col. 3, lines 56-67 and figure 5).

Though Ashmead et al. does not explicitly disclose wherein each stacked plate ("unit operation") has a catalyst surface (catalyst reaction unit), Ashmead et al. does teach catalytic reaction plates and wherein plates can be multiplied or replicated to achieve desired production rates of a reaction (col. 4, lines 20-36; col. 7, line 65- line 8, line 14; and col. 13, lines 23-37). It would have been obvious to one of ordinary skill in the art at the time the invention was made to select multiple catalyst plates in a stack in order to achieve a desired reaction rate and desired amount of chemical processing in a catalytic reaction process. Additionally, Ashmead et al. discloses wherein the choice of sequence and patterns of incorporating units (reaction plates) is within the skill of the art to achieve desired results (col. 13, lines 34-37).

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With respect to claims 4, 11 and 19, Ashmead et al. further discloses wherein said flow-through holes are axially offset (examples, figure 5, plates 200 & 300 and 800 & 900) to promote lateral flow between said plates (see fig. 5 and col. 9, lines 47-65).

With respect to claims 5, 12 and 20, Ashmead et al. further discloses wherein said etched side comprises unetched portions forming support columns for supporting each plate on an adjacent plate (see fig. 5, plate 1000).

With respect to claims 6 and 13, Ashmead et al. further discloses wherein said metal plates are substantially circular (see fig. 1).

With respect to claims 7 and 14, Ashmead et al. further discloses wherein said metal plates are bonded to one another to form a monolithic stack (col. 3, lines 42-45).

8. Claims 2, 3, 9, 10, 17, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashmead et al. (5,690,763) in view of Hsu et al. (6,183,703 B1).

With respect to claim 2, 9 and 17, Ashmead et al. does not discloses wherein a plurality of plates comprises a plurality of groups of plates and each group being separated from adjacent groups by a metering plate, but does disclose wherein a unit can perform flow distribution (col. 7, lines 26-30).

Hsu et al. discloses a stacked plate reactor with catalyst and teaches wherein a flow adjustment element (reads on metering plate) can be used to restrict flow to achieve greater uniformity of flow (col. 10, lines 15-22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide flow adjustment elements to the stack of Ashmead et al. in order to achieve greater uniformity of flow through the device.

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With respect to claims 2, 3, 9, 10, 17, 18 and 21, Ashmead et al. does not disclose a desired ratio of open area of various structural elements of the device.

Hsu et al. also discloses the any suitable design of flow adjustment element can be used to restrict the flow at selected and determinable rate (col. 10, lines 15-22). In stating thus, Hsu et al. has recognized the design of the flow element to be a result effective variable. A person having ordinary skill in the art would have found it obvious to determine the optimum design or designs of such a result effective variable recognized in the art, as it has been held that such a discovery is ordinarily within the skill level of the art. *In re Boesch and Slaney*, 617 F2d. 272, 276 [205 USPQ 215, 219] (CCPA 1980).

### ***Response to Arguments***

9. Applicant's arguments, see page 8-page 14, filed in the amendment of May 19, 2003, with respect to the rejection(s) of claim(s) 1-15 and 17-21 under 35 USC 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection comprising a different interpretation of the previously applied reference and newly found prior art reference(s) has been applied above.

### ***Conclusion***

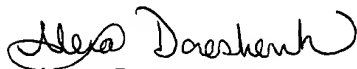
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 703-305-0074. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Alexa Doroshenk  
Patent Examiner  
Art Unit 1764

July 28, 2003